15¢

APRIL 16, 1949

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

PUBLIC LIBRARY
APR 18 1949
DETROIT

Landing Tracks

See Page 244

A SCIENCE SERVICE PUBLICATION

$5.00 A YEAR

VOL. 55 NO. 16

CARRIER-BASED BLIMP—The range and usefulness of blimps in anti-submarine warfare are greatly increased, the U. S. Navy has recently demonstrated, by take-offs and landings from the same type of carrier vessel used for Naval planes. The airship can be rearmed and re-fueled on the carrier, and also provided with a relief crew.

ARCHITECTURE

Design for Peace not War

➤ ATOMIC Energy Commission advice on dispersing buildings or putting them underground to avoid atom-bomb destruction: "Don't."

That is what Sumner T. Pike, member of the A.E.C., told the American Institute of Architects at its meeting in Houston, Texas. Scatter the buildings by all means, he advised, but don't do it simply through fear of destruction in war.

There are other and better reasons for dispersal than that, he declared; sanitation, relief from congestion, considerations of esthetics and efficiency all call for wider spacing of structures. And response to these needs for normal living will automatically provide a reasonable degree of military protection.

Similarly, Mr. Pike continued, the strengthening and fire-proofing of buildings merely through fear of atom-bomb blasting is doing a good thing for the wrong reason. Better make buildings fire-resistant because that is a desirable end in itself, and increase their structural strength to enable them to withstand natural shocks such as earthquakes and hurricanes. Making them completely bomb-proof or sinking them into the ground would add intolerably to their cost, and should not be done at all, except for those few installations which the national defense may mark as priority targets.

Soundest defense in time of war is a people made healthy and intelligent by the best possible life in time of peace, the speaker declared. Their consciousness that they have a life worth defending, and the things that flow from it, are the best possible weapons in a cold war, he said in conclusion. "They make up our war potential when peace is lost. To design for peace is our best defense."

Science News Letter, April 16, 1949

PHOTOGRAPHY-AERONAUTICS

Precision Calibrator for Aerial Cameras Developed

➤ A COMPACT instrument designed to calibrate precision airplane-mapping cameras has been developed by the National Bureau of Standards.

The new calibrator has several advantages over the one previously used. It requires but one negative for calibration instead of four, thus saving considerable time. Different sizes and shapes of the various makes of cameras to be tested can be more easily mounted regardless of their irregular protuberances.

The camera holder consists of a tripod placed over an opening in a table. The camera to be tested is held in position over the opening by gravity. It points vertically downward, with lateral movement prevented by stops. The table opening permits light to reach the camera lens from 25 collimators, instruments to make the rays parallel. The bank of collimators, arranged in the form of a cross, is mounted in a special casting beneath the table and centered below the opening.

Characteristics, such as focal lengths, distortion, and resolving power, of lenses for aerial cameras must be carefully measured. Specifications for precision mapping cameras, prepared jointly by the National Bureau of Standards and the American Society of Photogrammetry, are very stringent. Besides the characteristics of the lenses, a mapping camera must incorporate such features as a fixed focal plane, and rigid connection of the lens, focal plane, and camera cone into a single unit.

Science News Letter, April 16, 1949

PHYSICS

Sun's Energy May Be Harnessed To Produce Food

➤ THE SUN, greatest source of energy known to us, may be tapped more efficiently, thanks to research with by-products of the atomic bomb.

Dr. Robert F. Bacher, scientist-commissioner of the U. S. Atomic Energy Commission declared:

"We may be standing on the threshold of a series of discoveries which will have tremendous effect upon the ability of people to produce food and fuel by means of solar energy."

He said it is "possible" that man may learn to make food from the energy of the sun in the way in which plants do.

Dr. Bacher described new research developments as a guest of Watson Davis, director of Science Service, on Adventures in Science heard over the Columbia network.

The process by which plants utilize solar energy in food-making, called photosynthesis, is being studied with radioactive carbon tracers by Dr. Melvin Calvin of the University of California and other scientists, the Commissioner explained.

"Today, the rate of discovery in this field is high and increasing rapidly," Dr. Bacher pointed out. He cautioned that photosynthesis has proved to be "more complicated than anyone previously believed."

But if scientists can solve the mystery of photosynthesis, they will be making an important practical discovery, Dr. Bacher indicated.

"With many parts of the world today unable to produce sufficient food for the people who live there, probably no development is of greater importance."

Science News Letter, April 16, 1949

RADIOGENETICS

Abnormal Offspring?

Scientist challenges the statement that harmful hereditary changes will result from peacetime exposure to radiation.

➤ A SCIENTIFIC debate, the last word of which cannot be spoken for generations, perhaps for centuries, has been started in the relatively new field of radio-genetics. In the journal, SCIENCE (March 25), Dr. Robley D. Evans of the Massachusetts Institute of Technology challenges recent declarations that human beings are now in danger of acquiring harmful hereditary changes from peacetime exposures to atomic radiations and some kinds of X-rays, made by Dr. H. J. Muller, Nobel prizeman at Indiana University. Such changes can become evident only after several human generations.

Dr. Evans has made elaborate statistical analyses of the likelihood of human reproductive cells being unfavorably altered by such radiations, taking into account such factors as degree of exposure and time during which the cells are sensitive to the radiations. He concludes that:

"From the appropriate mathematical theory, and the experimental data now available, it seems safe enough to conclude that no detectable increase in hereditary abnormalities is likely to result, even after many generations, if a small fraction of the population receives daily radiation doses up to one-tenth roentgen per day."

Queried at Bloomington, Ind., Dr. Muller stated that he had examined Dr. Evans' manuscript before its publication, and had criticized some of its assumptions and its conclusions in considerable detail. Some of the data, based on atom-bomb explosions, have not yet been declassified, so cannot be discussed until a probably much later date. And in the meantime, at least three or four human generations must pass before the possible radiation effects become visible in great-grandchildren of persons recently exposed.

Science News Letter, April 16, 1949

MEDICINE

Test Airsickness Remedy

➤ AIRSICK? Pop a pill in your mouth half an hour before taking off and the chances are about 71 to 100 you won't be. The pill contains Dramamine, new anti-hayfever drug which has turned out to be a remedy and preventive of motion sickness.

A 71.3% no airsickness rate was achieved by Dramamine in tests with volunteers stationed at Randolph Air Force Base, Randolph Field, Tex. The tests are reported by Drs. Benjamin A. Strickland, Jr., and George L. Hahn, USAF School of Aviation Medicine, in the journal, SCIENCE, (April 8).

Dramamine's effect in preventing and relieving carsickness and seasickness was first discovered and reported by Drs. Leslie N. Gay and Paul E. Carliner of the Johns Hopkins Hospital Allergy Clinic. (*See SNL*, Feb. 26, p. 132.) They were trying it for treatment of hayfever and hives, for which it was developed. Unexpectedly, one of their patients who had suffered from carsickness all her life was completely relieved of this when taking Dramamine. Its success in seasickness was found through a study the Hopkins scientists made on a U. S. Army transport during a rough crossing of the north Atlantic last winter.

The Air Force tests were made with 18 men on flights at 5,000 feet altitude in which the pilots maneuvered the planes to simulate flights through "gentle and moderately turbulent air." More exhaustive studies under actual turbulent conditions should be made, the Randolph Field group believes, and further research on this and other drugs for preventing and relieving airsickness is now going on.

Science News Letter, April 16, 1949

ZOOLOGY

Inbreeding May Explain Elephants' Fast Evolution

➤ THE paradox of elephant evolution—how animals with the slowest breeding rate have yet had the swiftest history of the rise and decline of new species—may be explained by their close inbreeding habits, suggests Chapman Pincher, a London zoologist.

Elephants are known to live in small herds, each dominated by a single male, with father-and-daughter mating a common practice, Mr. Pincher points out in the journal, NATURE, (April 2). This would give maximum chances for the perpetuation of a new mutation, or sudden evolutionary change, even if this was of the type that required matching with another similar gene in order to survive into the next generation.

In the relatively short geologic time during which the elephant stock has existed on earth, Mr. Pincher states, there have been 300 different elephant species, of which only two now survive.

A similarly rapid evolutionary history marked by close inbreeding, he further points out, is shown by the deer and horse groups, and possibly by the pre-human ancestors of man.

Science News Letter, April 16, 1949

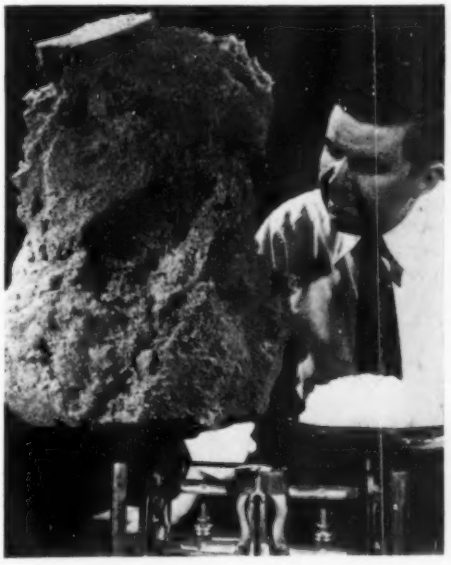
CHEMISTRY

Lightweight Plastic Foam Is Good Insulating Agent

➤ A NEW insulating material, a solid plastic foam with its volume increased 100 times by a baking process, was revealed by Westinghouse Electric Corporation. It is said to be the world's lightest solid.

The foam is made by heating a molasses-like synthetic resin at about 350 degrees Fahrenheit until it expands to 100 times its original volume and solidifies, Robert F. Sterling, Westinghouse chemist and inventor, states. Thousands of gas bubbles entrapped in the foam account for the volume and lightness.

A phenolic resin is used in the new material. The solidified foam is reddish brown in color and has a sponge-like appearance. When the liquid resin is mixed with a powder and heated for about 15 minutes, it traps oxygen as it expands. These oxygen bubbles soon become bub-



NEW PLASTIC INSULATOR—The plastic foam balances pie meringue on these scales because, despite the great difference in volume, they both weigh the same amount —five ounces. Making the weight comparison is Robert Sterling, Westinghouse chemist who developed the insulating material.

bles of air as the solidified plastic is exposed to the air. The solid plastic piece contains only one part of resin to 100 parts of air.

The new material is claimed to be satisfactory for all types of insulating, ranging from soft-drink coolers to prefabricated houses and airplanes. It is resistant to fire, moisture, fungus growth and insects. One particular value is that the liquid resin can be shipped in barrels and converted into foam where it is to be used.

Science News Letter, April 16, 1949

TELEPHONY

Toll Telephone Dialing

➤ NATION-WIDE toll dialing for long-distance telephone calls is promised for the relatively near future. With the addition of new toll dialing networks centering in New York and Chicago, the Bell System is now handling approximately 40% of its long-distance calls by the new automatic switching method.

Present networks enable local station operators to dial calls direct to subscribers' telephones in some 300 cities, the BELL LABORATORIES RECORD states. Ultimate plans are to extend the system throughout the United States and Canada. Additional automatic switching centers are scheduled to be established this year in Boston, Cleveland, and in Oakland, Calif.

The Bell System's program for nation-wide toll dialing is based on the development of a new electronic switching equipment which can select possible routes between distant cities, direct switching operations at intermediate points along a route, and complete connections automatically in a matter of seconds, the RECORD declares. When installations are completed, the average speed of all long-distance calls is expected to be about one minute, or about half the time now required.

The system calls for dividing the United States and Canada into 80 numbering plan areas, each to be distinguished by a three-digit code. Each telephone central office within each area will be designated by a three-digit office code. The operator in the local station in which the call is placed will dial all together 10 digits. The first three will get the proper area, the second three the proper central, and the last four will be the called number.

In calling distant cities, the operator does not actually dial the numbers as the local phone is dialed. Instead, a 10-button key set is used. Each time the operator presses a key, a tone pulse is sent over the regular voice channels to the switching center. This method is twice as fast as using the ordinary dial.

Science News Letter, April 16, 1949

AERONAUTICS

Government Issues Textbook On Airplane Powerplants

➤ FULL information concerning powerplants for aircraft is given in a government publication just released. It is entitled AIRCRAFT POWERPLANT HANDBOOK, and was prepared by experts of the Civil Aeronautics Administration.

This new publication, a complete revision of an early bulletin, is primarily a textbook for aviation students, mechanics, pilots and engineers, but will prove of value to many others interested in one phase or another of aviation. In its preparation full cooperation was given by the U. S. Air Force, Navy Bureau of Aeronautics and several engine manufacturers.

AIRCRAFT POWERPLANT HANDBOOK is available from the U. S. Superintendent of Documents, Government Printing Office, Washington, D. C., and not directly from the CAA. Its price is $1.25, and it is known as CAA Technical Manual No. 107.

Science News Letter, April 16, 194

On This Week's Cover

➤ TRACK-TYPE landing gear featured on the giant Air Force cargo and troop-carrier planes, known as the Fairchild C-82 Packet, permits safe landing on unsurfaced fields. It cuts the ground bearing pressure of the standard landing gear wheel by two thirds.

Science News Letter, April 16, 194

Question Box

BIOCHEMISTRY

On what does DDT's ability to kill seem to depend? p. 255.

CHEMISTRY

How can carbon monoxide poisoning be prevented? p. 248.

GENETICS

How has a bacterial colony confirmed the Mendelian theory? p. 247.

MEDICINE

How was an allergy drug discovered to be effective against airsickness? p. 243.

What new antibiotic is being tested against syphilis? p. 249.

Why are hospital costs expected to rise? p. 254.

PSYCHOLOGY

What approach will get the most work out of an employee? p. 245.

RADIOGENETICS

What are the chances, in the opinion of one scientist, of harmful hereditary changes from peacetime exposure to radiation? p. 243.

ZOOLOGY

Are red oysters harmful and what causes this color change? p. 246.

Photographs: Cover, Fairchild Aircraft; p. 242, U. S. Navy; p. 243, Westinghouse Electric Corporation; p. 245, Doman Helicopters, Inc.; p. 247, U. S. Coast Guard; p. 250, p. 251, American Forest Products Industries.

SCIENCE NEWS LETTER
VOL. 55 APRIL 16, 1949 No. 16

49,400 copies of this issue printed

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc. 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00, 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change, please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1949, by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, Princeton University; Karl Lark-Horovitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. Nominated by the National Research Council: Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate; H. L. Smithton, E. W. Scripps Trust; Frank R. Ford, Evansville Press; Charles E. Scripps, Scripps Howard Newspapers.

Officers—President: Harlow Shapley, Vice President and chairman of Executive Committee: Alexander Wetmore, Treasurer: O. W. Riegel, Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Frank Thone, Jane Stafford, A. C. Monahan, Marjorie Van de Water, Martha G. Morrow, Ron Ross, Lydia Schweiger. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. In London: J. G. Feinberg.

PSYCHOLOGY

Get Interested in People

If you want those working under you to turn out the greatest amount of work, treat them as personalities, psychologists advise, following investigation.

➤ IF YOU boss people and you want to get production, don't just harp on more work in less time—be genuinely interested in the people who are working for you.

That is one of the lessons that psychologists learned at the University of Michigan's Survey Research Center in Ann Arbor, Mich., in an investigation directed by Dr. Rensis Likert.

The supervisor whose employees turned out the greatest amount of work, the scientists found, is himself concerned primarily with the people working under him.

Pressuring for production may work to some degree. But the best results are achieved when a worker's internal motivations are tapped—his self-expression, self-determination, and sense of personal worth. A person works better when he is treated as a personality, given some degree of freedom in the way he does his work, and allowed to make his own decisions.

"The capacity of a nation or a society to survive," Dr. Likert explained, "depends in no small part upon its skill in organizing industrial, governmental and military activity.

"The effectiveness of the political, economic and military activity of any society is determined in large measure by the nature of that society's social organization and by its knowledge and skill in organizing human activity."

Some of the difficulties encountered in attempting to make international organizations function smoothly may be due to the lack of knowledge of fundamental principles that could be applied to their organization.

"We need," Dr. Likert pointed out, "to know the answers to such questions as: Why groups act the way they do; why some are effective and others are not; why certain groups become belligerent and even pathologically aggressive and destructive and what makes leadership effective."

This first study in a 10-year program of the effect of group organization on human action was made in the home office of the Prudential Insurance Company. Studies of other kinds of groups in business, government, and the armed forces as well as voluntary groups such as business and professional societies, women's clubs and the "against groups" such as the anti-vivisectionists are planned.

Comparison was made between the highest producing section in the Prudential Insurance Company and the lowest producing section of employees performing the same duties. A total of 742 non-supervisory personnel were interviewed and 73 supervisors and managers.

Supervisors of lower production groups are so immediately concerned with the goal of production that they try to reach it by what seems to be the most direct route, often spending a considerable portion of their own time on straight production work. High-producing supervisors, on the other hand, assume that the best way of attaining high-production is to motivate their employees by enlisting their identification with the work to be done and by giving them a feeling of responsibility.

Science News Letter, April 16, 1949

AERONAUTICS

Cab-Over-Engine Featured In New Helicopter

➤ CAB-over-engine arrangement features a new helicopter now ready for production in Danbury, Conn., by Doman Helicopters, Inc. This promotes stability in the air by permitting a better load-distribution, and solves troublesome center-of-gravity problems.

This new aircraft, already dubbed the Pelican because while lacking beauty it has ability to carry heavy loads, is designed primarily for agricultural insecticide dusting and spraying and for seeding extensive areas. However, it is suitable for use for other cargo purposes and with its easily placed seats can carry six passengers in addition to the pilot.

The 245-horsepower Franklin engine used in the Pelican is located in the nose of the craft under the pilot's cabin. It is mounted at a 20-degree angle with its drive shaft extending to the pylon. The arrangement gives the pilot maximum visibility and makes engine-servicing easy. Removable cowling permits engine replacement as simply as in ordinary airplanes.

The Pelican is designed for a gross weight of 3,200 pounds and can carry a useful load of 1,400 pounds. The agricultural craft has cruising speed of approximately 75 miles an hour, but with a different set of blades and gear ratio greater speed can be obtained if desired.

The light, highly flexible blades of the new craft are another notable feature. They are rigidly attached to the rotor hub, a system which eliminates complicated hinging, dampers, short-lived bearings and promotes relatively low-cost production. Rotor-induced vibration is virtually eliminated, it is claimed, and a satisfactory degree of stability is evident in flight.

Science News Letter, April 16, 1949

AGRICULTURAL CRAFT—Dubbed the Pelican, this model shows the cab-over-engine arrangement of a new helicopter which permits location of payload astride the ship's center of gravity. It can also be converted to carry six passengers in addition to the pilot.

GENERAL SCIENCE

Closer to Foundation

➤ A DISTINGUISHED but highly informal club of scientists may have held its final meetings in Washington. At any rate, the "members" hope so.

They are the scientists who have been testifying before Congress on the need for a national science foundation. Since the end of the war, a parade of the nation's great in science and education has told committees of the House and Senate that they wanted the foundation.

A subcommittee of the House Interstate and Foreign Commerce Committee has been listening to testimony on the foundation. Among the science leaders who urged passage of a bill to set up the foundation is Dr. Karl T. Compton, chairman of the Research and Development Board of the National Military Establishment.

Back in 1945, he first told a Senate hearing that he was in "wholehearted support of the basic objectives" of the foundation.

Nearly all the witnesses who appeared at the hearings had, like Dr. Compton, appeared one or more times previously in the past four years to call for establishment of the foundation.

Virtually all the "big names" of American science, technology and education have told one or the other committees of Congress since the war that they want to see the foundation start operating.

Most of them have had some suggestion to make about the organization of the foundation or its functions. But they have all told Congress that they want a foundation. In the last two years, they have added, the sooner the better.

The foundation would organize civilian, peacetime federal support of science under a new agency. The Senate this year passed a bill to start the foundation for the fourth time. Two previous bills died in the House, while President Truman killed one by a pocket veto.

Complicating matters for the House subcommittee which has been hearing the latest testimony of science leaders are eight bills—the one which passed the Senate and seven which have been introduced in the House.

However, most of the House bills differ only in detail with the Senate version. For this reason, plus administration support, scientists are hopeful that the foundation may be set up this year.

If and when it is, it will be a victory—after nearly four years—for a distinguished group of "lobbyists."

Science News Letter, April 16, 1949

ZOOLOGY

Color Change in Oysters

➤ RED oysters, instead of the usual pearl-gray ones, are not necessarily a cause for alarm. Such a color change occurred in oysters harvested from Maurice River Cove in New Jersey early last November. They looked as if they had been saturated with weak beet juice.

Buyers immediately began to shy away from these off-color oysters, and the New Jersey sea food industry might have suffered considerable financial loss, but scientific investigations proved that these red oysters were entirely wholesome despite their new color.

Dr. Thurlow C. Nelson, biologist at the Oyster Research Laboratory of the New Jersey Agricultural Experiment Station, looked into the records of the Fish and Wildlife Service and found that in 1931 there was an outbreak of red oysters in Chesapeake Bay, and that similar occurrences had been reported from Puget Sound, Washington. This was the first record, however, of the appearance of this condition in New Jersey, where the oyster has been studied for over 40 years.

In each case the outbreak of red colored oysters had been preceded by an extended period of unusual warmth in the fall. During this warm spell certain one-celled marine animals known as dinoflagellates became very numerous. The oysters sucked them in for food as they do other one-celled organisms.

Dr. Nelson predicted that the red-color of oysters would disappear when cooler weather arrived. He was right. On Nov. 16, when the water temperature dropped to 50 degrees Fahrenheit, the dinoflagellates disappeared, and there were no more red oysters.

"The red color," he explained, "is caused by the red or orange-yellow pigments found in many plants. Known as carotene pigments, they are widely distributed in the food we eat; one of these pigments in carrots is the forerunner of vitamin A—so important in preventing night blindness."

To discover the exact nature of the red coloring, Dr. Harold H. Haskin of the zoology department of Rutgers University extracted several of the red oysters with alcohol and ether and obtained significant amounts of at least three plant pigments which normally occur in food.

The red color might also have been caused partly by the small, soft oyster crabs which live within the shell cavity of the oysters, Dr. Nelson stated. These small, soft oyster crabs are esteemed as a delicacy by sea food fanciers. A deep red pigment is present in the eggs and in the crab in its formative stages. Dr. Nelson therefore advised the owners and operators of oyster shucking houses not to let crabs mix with the oyster pack during the breeding season of the crabs.

Science News Letter, April 16, 1949

MEDICINE

Medals Awarded Patients Who Live with Diabetes

➤ MEDALS are for medical heroes as well as those who fight well in wars.

To patients who fight well against diabetes, a disease that people can live with, Dr. Elliott P. Joslin, of Boston, leading authority on the disease, awards medals. He gives the medals in behalf of the advisory committee of the Diabetic Fund of the Boston Safe Deposit and Trust Company.

One of these medals is not so rare as it was when it was first awarded. Over a thousand patients at the Joslin Clinic alone have earned this medal for living longer with diabetes than the life expectancy of those without the disease.

Today, Dr. Joslin's figures show, the life expectancy of the diabetic is three-fourths that of the ordinary individual. Less than a decade ago only two-thirds of the diabetics lived that long. Each patient who earns the medal helps others to get jobs and insurance despite their having the disease.

A new and more exclusive medal has been provided to honor those who have diabetes and who have lived 25 years or more and still are in perfect physical health, aside from their diabetic condition. So far only seven of these medals have been awarded, five to Joslin Clinic patients and one each to patients at the Mayo Clinic and in Dallas, Tex.

Just as patients formerly were more liable to tuberculosis if they had previously had diabetic coma, so now the facts show that they are more liable to arteriosclerosis, for the same reason. Recently, Dr. Joslin explains, Dr. Priscilla White of the Joslin Clinic has demonstrated that incapacitating arteriosclerosis is infinitely more common among those who have had attacks of coma in their previous history. It is not the coma itself but the fact that coma means treatment of the disease has been neglected.

Science News Letter, April 16, 1949

ENGINEERING

New Type Lighthouse Sends Radiobeacon Signals

➤ A NEW type of lighthouse to aid mariners approaching shore is in the making. The first of the type to be erected, now nearly ready for service, is situated on the breakwater of the Los Angeles harbor, of which Long Beach harbor is a part.

This lighthouse has the familiar flashing light, and a foghorn for use when needed.

In addition, it is a radiobeacon station and provides radio beams which ships may follow by radio direction finders. One important feature of the installation is that it is automatic in operation and requires servicing only about once a month.

The U. S. Coast Guard will keep close check on the operation of the new lighthouse from a light station four miles away. The three-story structure is designed to withstand earthquakes and wind and wave forces. Its 36-inch airway beacon-type lantern, producing 140,000 candlepower, will flash a warning light around the horizon every five seconds.

Science News Letter, April 16, 1949

PHYSICS

International Temperature Scale Has New Refinements

➤ THE so-called International Temperature Scale, as revised in 1948 with refinements based upon 20 years of experience, is now in use at the National Bureau of Standards in its own research program and in calibrating instruments for other scientific and industrial purposes.

This revised scale was adopted in Paris by the Ninth General Conference on Weights and Measures last October. It is the first revision since its original adoption 21 years ago. Although the 1927 scale proved useful in providing a stable, uniform, and precise basis for obtaining temperatures, later increased precision attained in temperature measurements made a revision desirable.

The scale is based upon six reproducible temperatures, or fixed points, to which numerical values are assigned. The six fixed points of the 1927 scale were the boiling of oxygen (—182.97 degrees Centigrade), the freezing and boiling points of water, the boiling point of sulfur (444.60 degrees Centigrade), the melting point of silver (960.5 degrees) and the melting point of gold (1063 degrees). The same fixed points are specified in the 1948 scale except for a change in the silver point from 960.5 to 960.8.

From 190 degrees below zero Centigrade to 660 degrees above, the measure of temperature in the 1927 definition was based on the indications of a standard platinum-resistance thermometer used in accordance with specified formulas. From 660 degrees to the gold point a platinum-rhodium thermocouple was the reference instrument. Above that, the optical pyrometer has been standard.

In the 1948 revision, the standard platinum-resistance thermometer is to be used from the oxygen point to the freezing point of antimony (above 630 degrees) rather than over the range from —190 to 660 degrees. Platinum of higher purity is also specified for the standard resistance thermometer and the standard thermocouple.

Science News Letter, April 16, 1949

NEW AUTOMATIC LIGHTHOUSE—On the breakwater of Los Angeles harbor stands this first-erected new type of lighthouse, which in addition to its beacon-type lantern and foghorn provides radio beams for ships to pick up.

GENETICS

Survival by Selection

Experiments with bacterial colonies have shown that the environment acts as a selective agency on the survival of organisms.

➤ WHAT looks at first glance like a clear case of Lysenkoist heredity, in colonies of bacteria in the laboratories at Columbia University, proves upon critical examination to be "orthodox" Mendelian heredity after all, with environment serving merely as a selective agency acting on organisms whose heredity is already fixed, to pick out those able to survive when the environment is changed.

Bacteria were chosen by Dr. Francis J. Ryan as subjects for his experiments largely because they can produce a new generation in 20 minutes, instead of the 20 years required in human beings. Strains were found that required the presence of one environmental factor, one of the amino acids, for survival.

Then this amino acid, known as histidine, was withdrawn from the environment. Nevertheless, bacterial colonies continued to reproduce and grow, no longer needing the histidine.

This looks like a hereditary change induced by a change in the environment, which the Lysenko school of biological thought in the USSR insists is the only true mode of heredity.

What actually happens, however, is that in the original, histidine-requiring colony there are a few bacteria already present that can get along without the amino acid needed by all the rest. When the histidine is taken away, the other bacteria die off, while these survive and multiply, until finally the entire colony consists of their descendants.

A parallel case might be pictured on the human scale, although Dr. Ryan does not use this illustration. Suppose there were, on an imaginary island, a colony of 10,000 Chinese used to living on rice and fish, with 50 Eskimos scattered among them. Suppose then that the rice and fish gave out, and that the only available food thereafter were seal-meat and whale-blubber. After several generations there would be no Chinese left, and the whole population would consist of Eskimos. This is not an absolute parallel, since food habits are probably not fixed by genes; but the situation is at least close enough to be illustrative.

Science News Letter, April 16, 1949

ENTOMOLOGY-RADIO

Radar Reflections Traced To Flying Insects

➤ FLYING insects in the lower atmosphere are now said to be the cause of heretofore unexplained "blips" appearing on the viewing screen of radar equipment. The insects seem to reflect radar waves in the same way that they are sent back as "echoes" from a distant airplane. Blips are the light spots on the screen, caused by the reflections, that warn the operator of objects located.

This explanation of insects being the cause of the mysterious radar reflections that have long troubled scientists is made by A. B. Crawford of the Bell Telephone Laboratories in the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS, (April). His conclusions are based on tests and observations sponsored jointly by the Bell Laboratories and the Naval Electronics Laboratory, and conducted at Gila Bend, Ariz.

The discovery came with the aid of a powerful searchlight beam and a 200-foot tower. Working at night, observers at different levels of the tower counted insects while radar operators counted blips on their radar scopes. In one 15-minute period, 20 blips were counted, 15 of which coincided with the sighting of an insect.

Insects fit most of the descriptions which have been applied to the mysterious reflections on radar scopes, the Bell scientist states. They are small and they move at speeds comparable to wind velocity, sometimes with and sometimes against the wind. Also they are present both day and night, and there are more of them in warm weather than in cold.

Science News Letter, April 16, 1949

AERONAUTICS

Propose New Rules To Aid International Air Travel

➤ VEXING delays and formalities in crossing international boundaries by air are to be cut to the bone if proposals made in Montreal by the International Civil Aviation Organization are accepted by the 51 member states. The purpose is to make international air travel easy.

They are a set of uniform rules to which the customs, immigration and related regulations of the nations included in the organization are to be adjusted as far as they apply to international air travel. Unless a majority of the nations disapproves them by August 1 they will go into force on March 1, 1950.

The new rules will make international air travel simpler by reducing the nation's entrance requirements and by standardizing the number and content of forms required by authorities at entry airports. Included is a provision which would eliminate intransit visa requirements for passengers arriving and departing on the same through flight, and which would rule out the need for producing passenger and cargo manifests for customs and immigration authorities during such flights.

An embarkation-disembarkation card, which can be filled out by each passenger during flight, is designed to ban the many forms now used. With this card in use, travellers will no longer have to obtain temporary entry permits, and may lead to the further reciprocal elimination of entrance visas for temporary visitors.

The proposed plan also provides that national governments should not require such forms as certificates of good conduct and good health for purposes of entry. Again, it provides for necessary steps to prevent the importation of insects and other public health hazards to be carried out as far as possible during flight so that a further reduction in time spent on the ground will result.

Science News Letter, April 16, 1949

MINERALOGY

Iron Ore from Venezuela May Supplement U. S. Ore

➤ IRON ORE from Venezuela may soon supplement America ores and extend the life of the fast diminishing domestic supply, the annual report of the United States Steel Corporation reveals.

Extensive exploratory drilling in this nearby South American country is in progress in areas believed to contain iron ore deposits of considerable magnitude. U. S. Steel has also taken an option on manganese properties in Brazil and an investigation is underway to determine if they can be economically utilized.

Manganese is an essential in the making of modern steels. An ample supply from South America would relieve the need for Russian ore. Practically one-half the manganese mined in the world is from Soviet territory. Newly discovered manganese deposits relatively near the coast in the Brazilian area north of the Amazon river are closer to the United States than other deposits now used (*See SNL*, March 5, p. 147).

Another notable step of U. S. Steel is reviewed in the report. It is the completion of the postwar giant steel plant constructed at Pittsburg, Calif. This makes steel available without transcontinental transportation to the rapidly developing industries of the West Coast. The plant cost $938,000,000, is equipped with modern machinery, and is producing cold-reduced sheets and tin plate for western industries.

U. S. Steel produced during 1948 a total of 29,300,000 tons of steel ingots and castings, the report states. This is 93.8% of capacity because of coal strikes and shortages of essential materials. During the last quarter of the year, production averaged 99.4% of capacity.

Science News Letter, April 16, 1949

IN SCIENCE

CHEMISTRY

Carbon Monoxide Poisoning Prevented by New Powder

➤ A PREVENTION against poisoning by carbon monoxide gas in garages, aircraft, submarines, factories, mines and other places was revealed at a meeting of the American Chemical Society in San Francisco by Dr. Morris Katz and Sophie Halpern of the Canadian Department of National Defense, Ottawa. It utilizes a new chemical powder which neutralizes the gas.

The new powder contains silver permanganate as the active agent. This is coated on minute particles of so-called carriers when it becomes highly effective and notably long-lived in the temperature and humidity ranges generally encountered in the temperate and tropical climates, they declared. In addition to use in gas masks, the powder can be placed in ventilating and air-conditioning systems to clean large volumes of air.

Dry silver permanganate by itself shows virtually no activity toward carbon monoxide, they stated. But when it is coated upon a suitable carrier, it can remove all the carbon monoxide from a rapidly moving stream of air at normal temperatures and humidity. In the process described, the silver permanganate is used as a coating on granules of various metallic oxides, clay, talc, or purified asbestos fiber.

Science News Letter, April 16, 1949

ZOOLOGY

Hibernating Bats Become Temporarily Cold-Blooded

➤ BATS in hibernation become cold-blooded animals for the time being, just as do several other species of normally warm-blooded animals that indulge in long winter sleep. This was demonstrated in measurements on 23 bats found hibernating in abandoned mine tunnels in Nevada, by William G. Reeder and John A. Kopec of the University of California at Los Angeles.

Carefully picking the torpid bats off the walls of the tunnels, and handling them as gently as possible so as not to awaken them, they determined their body temperatures by inserting a small thermometer down their gullets. The readings were always quite close to the temperatures of the tunnels—between 50 and 55 degrees Fahrenheit—and far below the normal level of active warm-blooded animals. The first signs of awakening, which usually came in from 20 to 30 seconds, would be accompanied by a rapid rise in body temperature.

Science News Letter, April 16, 1949

E FIELDS

MEDICINE

Aureomycin Being Tested As Syphilis Remedy

➤ AUREOMYCIN, one of the new antibiotic remedies of which penicillin is the granddaddy, is now being tried as a weapon against syphilis. If it works, it will have the advantage that patients can take it by swallowing a pill instead of having to take "shots" via the hypodermic needle.

"Aureomycin appears to have definite antitreponemal (antisyphilitic) activity when given by mouth," three Mayo Clinic scientists reported at a U. S. Public Health Service—American Venereal Disease Association symposium in Washington. The Mayo scientists, who have tried the drug in six patients are Drs. Robert R. Kierland, W. E. Herrell and Paul O'Leary.

It is much too early and there are too few patients to tell whether there will be relapses or failures with the drug, they caution, adding that it will also remain for the future to tell how aureomycin compares with penicillin as a remedy for syphilis.

They gave the drug to the patients every four hours for about two weeks.

Science News Letter, April 16, 1949

PHYSICS-AERONAUTICS

New "Sky Compass" Will Aid Polar Air Travel

➤ AIRPLANE travel over the Polar regions will be aided by a "sky compass" developed by the National Bureau of Standards. This new compass is particularly for use during the long periods of twilight when neither the sun nor the stars are visible.

It is a non-magnetic compass. Magnetic compasses are of no help in the areas above Hudson Bay and below the Straits of Magellan, close to the magnetic poles. Nor can a sun compass, which indicates the direction of flight by direct sighting on the sun, be depended upon because of the many hours of twilight in these regions. The same is true of the astro compass, which measures direction by the stars or other heavenly bodies.

The principle upon which the new sky compass is based is analogous to that utilized in polaroid sun glasses, Bureau officials state. It has long been known by physicists that light, ordinarily consisting of vibrations in all directions at right angles to the ray, can be obtained in the laboratory, and exists in nature, with its vibrations restricted to one direction or plane.

Such light is said to be polarized. An example is sunlight from the unclouded sky scattered by the minute particles of the atmosphere. A sky compass using this principle alone might have an accuracy of ten degrees. The new Bureau compass makes use of a much more sensitive device.

A piece of cellophane is attached to the top side of the polaroid. Cellophane has the property of rotating the directions of light vibrations through an angle before it strikes the polaroid. When looking at the sky, there may be a contrast in sky brightness as seen through the polaroid alone and seen through both the polaroid and cellophane. If there is no difference in brightness, the plane of polarization is established, and hence the direction of the sun. North-south direction is then determined by astronomical tables.

The Bureau's sky compass is based on investigations of the late Dr. A. H. Pfund of Johns Hopkins University and was developed in cooperation with the Navy Bureau of Aeronautics.

Science News Letter, April 16, 1949

NUCLEAR PHYSICS

Atomic Pile Measurements Made of Chemical Elements

➤ ATOMIC furnaces can be used to find out how much of a chemical element is in an unknown material, even when there is only about one part of the element in perhaps a hundred million parts of the material.

This important new scientific use for the atomic furnace or chain-reacting neutron pile, has been worked out by a pair of scientists at the University of Chicago's Institute of Nuclear Studies and the Argonne National Laboratory. First pile-measurements were made of two of the rarer elements found in meteorites.

Dr. Harrison Brown and a graduate student, Edward Goldberg, explained their new atom-age measuring technique in the journal, SCIENCE (April 8).

They used the heavy water pile at the Argonne laboratory to determine how much of the elements gallium and palladium were present in various iron meteorite samples. These and other studies of the chemical makeup of meteorites, the scientists explain, may give important clues to such mysteries as the structure of planets, including the earth, and the origin of our solar system.

Both a piece of the material being studied and a known weight of the element being sought are irradiated in the atomic furnace. The activity induced in the known and the unknown samples is then compared, to find out how much of the element there is in the material being analyzed.

Results from these tests of meteorites were so satisfactory that the scientists believe the atomic pile can be an important new tool for finding and measuring tiny amounts of chemical elements in an unknown material.

Science News Letter, April 16, 1949

GENERAL SCIENCE

International "Point Four" Program Is Being Planned

➤ AN international "point four" program for giving technical aid to underdeveloped countries under UN auspices may bulk large in the world's future.

Dr. Jaime Torres Bodet, director general of UNESCO, after seeing President Truman and other U. S. officials, discussed before leaving Washington a planning meeting now in progress at Lake Success.

Considerable sums of money should be spent, in Dr. Torres Bodet's opinion, on both basic education and scientific research. Possibly the new program, jointly operated by UN agencies, such as UNESCO, the World Health Organization, the Food and Agriculture Organization, through the Economic and Social Council, will eventually become larger than some of the specialized individual efforts.

For the next few weeks, the specialists will be formulating a joint plan that will go to the council. Then money will have to be found to undertake the actual operations recommended. Countries to be helped would have to request and welcome the experts from abroad, just as has been the case under the Marshall Plan.

How the USA point four program urged in President Truman's inaugural address and the UN plan, which originated in a USA-backed proposal, will work together is still to be determined.

The experts want enough money to do a good and permanent job of taking science and education to the people. Dr. Torres Bodet warns that too little money spent will result in symbolic results that will disappoint and disillusion the peoples that they are supposed to aid.

Science News Letter, April 16, 1949

MEDICINE

Virus X Is Not Caused by DDT

➤ IF you are worrying about getting so-called virus X disease from the insecticide, DDT, you can set your mind at rest.

The U. S. Food and Drug Administration knows of no scientific evidence to support the theory that DDT causes either virus pneumonia of man or X disease of cattle. Virus X disease in man resembles pneumonia and is called primary atypical virus pneumonia, Food and Drug medical men explain.

One of the symptoms of X disease in cattle is a thickening of the skin, called hyperkeratosis. A similar condition has resulted when DDT in kerosene was sprayed on the skin. The condition also appears when kerosene without DDT is sprayed on the skin, showing that the skin thickening is due to the kerosene, not the DDT.

Science News Letter, April 16, 1949

FORESTRY

Tree Farming Is New Business

This form of agriculture is conducive to rocky land. Markets must be near for by-products although some manufacturing steps can be carried out on the farm.

By A. C. MONAHAN

➤ TREE farming is a new term for a distinctive American business. It refers to a farm devoted to growing trees and obtaining income from lumber and by-products. A tree farm may include a little ordinary farming on the side, but lumber-growing is its principal activity.

The term tree farming has been in use only since the beginning of the present decade, but there are now well over 1,600 recognized true tree farms in the United States and they are well distributed. This is a figure from American Forest Products Industries, an organization encouraging their establishment in the interest of a perpetual lumber supply for the nation.

Some of these units are too large to be regarded as farms, but many are one-family units of a few hundred or a few thousand acres. They provide year-around occupation for the family group, and income for their welfare. Trees are the crop, not grain, cotton, cattle or poultry, as in other farming.

Some of these family-unit tree farmers engage in no activity but planting, cultivating and harvesting trees. Others have small sawmills and other equipment, so that they can turn out finished lumber and other wood products. These are more profitable, particularly if they have facilities for turning into marketable products what otherwise would become waste.

Scientific Forestry

The successful tree farmer must know much about modern scientific forestry. He must be able to recognize when trees have made their maximum growth and will make no further gains if left standing. He must know the best logging procedures to get out the ripe timber without injury to the younger trees still in a growing stage. He must know how to protect his woodlands from all the destructive insects and fungi that can ruin a forest. He must know how to protect it from fire. Fire in a wheat field destroys a one-year crop; fire in a forest may destroy many years of growth.

Selective logging is the number one essential on the tree farm. This means that repeated surveys must be made to determine which trees are ready for harvest. It is a system in contrast with older methods of logging in which everything was cut. This means great waste, and the necessity of reseeding if the land is to be used for future tree crops.

There are many factors that enter into successful tree farming, as there are in all other types of agriculture. The land must be suitable. It is not generally considered wise to use fertile plowland for tree growing because greater profits can usually be obtained from other crops. Inexpensive, rough, hilly and rocky land can be used. The growth may be slower, but the investment is much less, and good forest cover has a tendency to build up soil fertility.

Location is of particular importance. Logs and sawed lumber can be shipped long distances but the tree farmer needs a nearby local market for by-products, such as firewood. One of the greatest wastes in major logging operations in the remaining virgin forests is due to the distance of markets for anything but the lumber.

The ideal location for a tree farm is within trucking distance of a town where there is a market for firewood and factories for treating wood products for fence posts, railroad ties, telegraph poles and piling. It would be well also to be near plants that use such wood wastes as sawdust and stumps, in manufacturing wallboard, plastics, wood flour, molasses for cattle feed, and as a source of organic chemicals derived from wood or made from wood derivatives.

Some of the manufacturing processes can be carried out on the farm itself by the tree farmer where the necessary investment in equipment is not great. Small kilns for charcoal making are now used on some tree farms. A relatively new process of making a fine quality wallboard from sawdust and other wood wastes by chemical treatment requires little skill and only inexpensive equipment. It is a process developed at the Polytechnic Institute of Brooklyn.

Processing Sawdust

In this process, sawdust and other ground-up wood wastes are put in a mixer with the chemicals, and churned for a few minutes. The pulp resulting is then squeezed in a hydraulic press to form strong, grainless boards. A ton of sawdust will make 2,000 square feet of first quality, strong, water-resistant wallboard.

For tree farmers with their own sawmills, and planers to turn out dressed lumber, the shavings may become a source of income by manufacturing them into boards. Molded boards of softwood shavings can be produced at a price competitive with ply-

SELECTIVE LOGGING—When this Washington tree farmer cut the tree from the stump on the left 26 years ago, the Douglas fir on which he has his hand was a seedling.

TREE HARVEST TIME—A crop of cut timber is examined by a New England tree farmer.

wood or lumber under certain conditions. A resin is employed as a binder; heat and pressure do the rest.

A new process of making good pulp for paper from deciduous softwood trees opens up a new possible market to tree farmers for wood that otherwise might be unmarketable. Such woods as beech, birch, maple and poplar can be used. Most paper pulp is now made from evergreen trees, such as spruce, fir, hemlock and pine.

With the present tremendous demand for woodpulp, evergreen pulpwood trees are becoming scarce. With the new process, sponsored by the U. S. Bureau of Standards, woods never before used in quantities can be utilized to relieve the world's newsprint shortage. The process is similar to that used in making other pulp, but the addition of a chemical is required. It is a synthetic resin known as melamine formaldehyde. It is an important discovery because it makes the erection of pulp mills possible in areas with little evergreen but with plenty of other trees.

Chemicals from Wood

The production of organic chemicals from wood has lagged behind possibilities, perhaps because of the ease with which many of them are obtainable from coal, petroleum and other sources. In nation-wide programs being formulated for the elimination of wood wastes, the production of chemicals is included.

Wood alcohol, distilled out of wood by heating it in a retort from which air is excluded, is well known. Charcoal is left in the retort. Gases driven off in the process include such usable ones as carbon monoxide, hydrogen, methane and ethylene. A dark-colored liquid that distills off contains acetic acid, acetone and some tar and oils.

The cellulose of the wood may be broken down into many useful products by chemical treatment. Important among these are the wood sugars obtained. Wood sugar can be used to grow feed yeast and to make ethyl alcohol. Perhaps a more important use, and one in which there is great interest at the present time, is in cattle feed.

Wood Molasses

For this purpose, it is used in the form of what is called wood molasses. From 120 to 200 gallons of molasses, 50% sugar, can be made from a ton of wood wastes. Sugarcane molasses, usually blackstrap, has long been used for livestock feed. Cattle seem to do well on wood molasses and like the taste. A commercial process for obtaining wood molasses has recently been developed by the U. S. Forest Products Laboratory, Madison, Wis., and the product compares favorably with blackstrap for many uses in addition to cattle feed.

Tree farming is an activity of far more than local importance. Metal reserves can become exhausted and can not be replaced. With proper acreage devoted to timber growing, there will always be available lumber for all purposes. Also, tree farming promotes other types of land use. Forest-covered lands hold water, and act as reservoirs to prevent floods and to provide moisture for cultivated crops during dry seasons.

Science News Letter, April 16, 1949

GENERAL SCIENCE

Award to Be Made for Kindness to Animals

➤ BOYS and girls who show kindness to animals ordinarily do so without expectation of praise or reward—other than the gratitude of the animal itself. However, the American Veterinary Medical Association, with headquarters in Chicago, has announced that an award consisting of a framed certificate and a $100 U. S. savings bond will be given to some boy or girl under 18 for an outstanding act of help or mercy to a domestic animal.

This may be a rescue, some project in behalf of animals, or a written essay, Dr. S. T. Michael of San Francisco, chairman of the award committee, stated.

Nominations close May 1, and the winner will be announced on July 11, at the A.V.M.A. national convention in Detroit. Entries should be sent to the American Veterinary Medical Association, Chicago, Ill., or to Dr. S. T. Michael, 2500 Sixteenth St., San Francisco 3, Calif.

Science News Letter, April 16, 1949

LINGUAPHONE

is your Passport to the World

In your own home, alone or in a group, you can now learn to speak

SPANISH • PORTUGUESE
FRENCH • RUSSIAN
ITALIAN • GERMAN

or any of 23 other languages by the world-famous

LINGUAPHONE
Conversational METHOD

You learn the new language by listening to voices of native teachers. It is amazingly simple; thousands have succeeded. Educators hail Linguaphone as a notable advance in simplifying the mastery of languages. That is why so many Linguaphone Sets are used in schools, colleges, universities, as an aid to *fluent* speaking.

Available to Veterans under G I BILL OF RIGHTS

SEND FOR FREE BOOK
LINGUAPHONE INSTITUTE
31 RCA BUILDING, NEW YORK 20, N. Y.

LINGUAPHONE INSTITUTE
31 RCA Bldg., New York 20, N.Y.
Send me the FREE Linguaphone Book.
I am ☐, am not ☐ a World War II Veteran
I want to learn.....language.
Name .....
Address..... City.....

ZOOLOGY

Rats' Ways Observed

➤ AN "operation rathole" that produced results of value both scientifically and practically was carried on by Dr. Rocci G. Pisano of San Jose State College and Dr. Tracy I. Storer of the University of California. They literally looked into numerous ratholes, to find out how the rats built and used them, with the ultimate objective of making more effective war on the rodents.

The ratholes were in a series of poultry pens at the state experiment station at Davis, Calif. The rats fed on grass and weeds while the pens were unused, then stole part of the feed when turkeys were kept in them. A rathole is a good deal more than a simple hole, the two zoologists found; there is a central den, with at least two entrance tunnels, and usually a bolt-hole lightly plugged with earth at its outer end through which the rat may make an emergency escape if necessary. In at least one of the ratholes there was a blind-end tunnel partly stuffed with food debris.

Drs. Pisano and Storer also placed captured rats in observation cages with glass sides, to study the animals' digging methods. A rat, they found, digs with its front feet, shoving the loose soil back under its belly and kicking it farther back with powerful strokes of its hind feet. Then it will turn around and push the soil along with the forepart of its body.

When a rat gathers grain for food, they observed, it will pick up a mouthful, then scurry back to the safer neighborhood of its burrow to eat it. Sitting on its hindquarters, it will hold each grain in its forepaws and strip off the outer hull with its teeth. As a rule, each animal has one or more preferred spots where it prepares grain in this way. These spots, identifiable by the pile of discarded hulls, the zoologists named "shucking stations".

Rats, they found, make considerable use of their teeth in digging operations. They chisel through roots and remove stones with them, and employ them as scrapers when the soil is too hard to scoop with their paws.

Science News Letter, April 16, 1949

COSMETOLOGY

Treatment for Dandruff

➤ DAILY gentle massage of the scalp followed by brushing and frequent shampoos make up the anti-dandruff treatment advised by the American Medical Association.

These measures "faithfully executed will be of considerable value" in controlling dandruff, the AMA committee on cosmetics states in the association's JOURNAL (March 26).

Hair tonics and other preparations and treatments for hair and scalp, including treatments for baldness, are debunked in the report which indicates they are a waste of money.

"Fees in amounts equivalent to that of a major surgical operation are paid by thousands of persons yearly for futile hair-saving or dandruff-curing treatments or remedies," the committee states.

With the debunking of the preparations goes a warning that some preparations may make matters worse, may cause scalp irritation and sensitization, and may have even more serious results.

Injections of vitamins into the scalp "can have disastrous results" and injection of any substance into the scalp is, the committee warns, "a highly questionable and risky procedure."

Ultraviolet light treatments may have "some usefulness" but the committee warns that "only those whose scientific background makes them capable of understanding the limited available data and the potential health hazards should undertake the supervision of such treatments."

The oldest medical prescription on record is for baldness but medical science does not yet know much about the cause of this condition nor does it know any cure for it. "Before and after" pictures advertising baldness cures may, if genuine, be of persons who lost hair because of prolonged severe illness, nervous shock or injuries and who would have grown new hair without any treatment.

Science News Letter, April 16, 1949

Plastic Coasters and Tiles
EMBED REAL FLOWERS in NEW Magic PLASTIC
Now, create many unusual things like the distinctive pansy coaster shown—made by embedding real pansies in Castolite—the "magic" liquid plastic that "pours cold like honey . . . sets like glass" . . . at room temperature. Comes crystal clear or may be dyed for brilliant color effects. Embed other flowers, too, also coins, butterflies, medals, etc. Make really different jewelry, candlesticks, picture frames for gifts or to sell.
POUR GORGEOUS BOOKENDS
Castolite makes it easy to cast exquisite bookends like the one shown. Make duplicates of hundreds of art objects, figurines, etc. No special artistic ability needed. With new, easy-to-use Castomold you make your own molds in minutes. Use only home utensils. Follow simple step-by-step method. New pleasure, fine profits are possible.
EMBED YOUR PHOTOS
Preserve treasured photos in Castolite. Make beautiful medallions like the one shown, unusual photo lampshades, lamp bases, paperweights with embedded photos.
Send 25c for new Instruction Manual, packed with pictures showing how to get started. Write today.
MANUAL 25¢
The Castolite Co.
Dept. D-342
Woodstock, Illinois

ENTOMOLOGY

British To Raise Locusts Because of Roach Shortage

➤ BRITISH scientists are going to learn how to raise locusts, due to a shortage of cockroaches.

Here's the tale of the good wind that blew somebody ill. The all-too-plentiful cockroach has in the past been a favorite for zoologists to study, and it wasn't hard to find cockroaches. But now modern insecticides have made it difficult to get "adequate supplies of cockroaches," a note in the British journal, NATURE (Feb. 12), laments.

One answer seems to be to use locusts in place of cockroaches in scientific laboratories. Locusts, it is explained, are larger than cockroaches, easy to raise and have a rapid life-cycle, about seven weeks.

For British scientists who want to raise laboratory locusts, instructions on breeding and rearing locusts have been prepared by, of all people, an organization called the Anti-Locust Research Centre.

Science News Letter, April 16, 1949

Science Service Radio

➤ LISTEN in to a discussion on "Genetics in the Atomic Age" on "Adventures in Science" over the Columbia Broadcasting System at 3:15 p.m. EST, Saturday, April 23. Dr. H. J. Muller, professor of genetics at Indiana University and Nobel prize winner in medicine, will be a guest of Watson Davis, director of Science Service. Dr. Muller will discuss the disturbing possibilities that human heredity may be quite unfavorably influenced not only by atomic radiations but by ordinary X-rays in certain medical uses.

Science News Letter, April 16, 1949

TESTA MICROSCOPES

Model F $89.00
Illustrated — Standard Lab. microscope with triple nosepiece, condenser stage, achr. objectives. Up to 600X. Compl. line accessories, incl. oil immersion, available.

Model G-3 ..... $52.50
75-400X. For high school & Lab. use. Divisible achr. obj.

Student Model S $29.50
65-200X For elementary use. Thousands in use, here and abroad. Approved by science clubs, schools, microscopists. Send now for folder on the model which interests you.

Testa Manufacturing Co.
420 S. Pecan St. Los Angeles 33, Calif.

WAR SURPLUS OPTICAL BARGAINS

ASSEMBLE YOUR OWN BINOCULARS

Complete Optics!

Complete Metal Parts

SAVE More Than ½ Regular Cost

GOVERNMENT'S 7 x 50 BINOCULARS

American Made—not Jap, French or German)

Here's an unusual opportunity to secure a ine set of Binoculars at a substantial sav- ng of money. Offered here are complete ets of Optics and Metal parts for the x 50 Binoculars. These components are ew and all ready for assembly. Full in- tructions supplied. **METAL PARTS**—Set ncludes all Metal Parts—completely fin- shed—for assembly of 7 x 50 Binoculars. lo machining required. A sturdy Binocu- ar Carrying Case is optional with each set f Metal Parts.

tock No. 842-Q ..... $39.40 Postpaid
plus $4.80 for Case ..... Total $44.20

PTICS—Set includes all Lenses and risms you need for assembling 7 x 50 inoculars. These optics are in excellent ondition—perfect or near perfect and have ew low reflection coating.

tock No. 5102 Q—7x50 Optics—**$25.00 Post- aid. NOTICE: Add 20% Federal Excise Tax o your remittance if you buy both Binocu- ar Optics and Metal Parts.**

ARMY'S 6 x 30 BINOCULARS

OMPLETE OPTICS & METAL PARTS—lodel M-13A1, 6 x 30 Binoculars (Water- roof Model). Everything you need—ready or assembly. When finished will look like regular factory job costing $102 to $120. he Optics are new, in perfect or near- erfect condition. Have new low reflection oating. Metal parts are new and perfect, ll completely finished. No machining re- uired. Complete assembly instructions in- luded.

tock No. 830-Q ..... $40.00 Postpaid
plus $8.00 tax ..... Total $48.00

IETAL PARTS ONLY—Model M-13A1, 6x30 inoculars. No Optics. Same Metal Parts s described for Stock No. 830-Q.

tock No. 832-Q—6 x 30 Metal Parts ..... $25.00 Postpaid

PTICS FOR 6 x 30 BINOCULARS (No letal Parts.) Perfect and low reflection oated.

tock No. 5130-Q ..... $15.00 Postpaid
f you buy both the Binocular Optics and he Binocular Metal Parts, add 20% Fed- ral Excise Tax to your remittance.

PTICS AND METAL PARTS are avail- ble for Monoculars (½ a Binocular). For omplete details, write for Bulletin Q.

IOUNTED TELESCOPE EYE-PIECE—Kell- er type. Excellent astronomical and other elescopes. War Surplus. Government cost bout $18.00. Focal length 24 mms. Lens iameter 23 mms. Unusually wide field.

tock No. 5189-Q ..... Price $3.25 Postpaid

We have over 200 different sizes and focal engths of Plano-Convex, Double Convex, oncave and Meniscus Lenses, priced from c to 30c each. Write for Catalog Q.

lew Bulletin on Microscope Sets, Filters, eticles, Flat Glass. Write for Catalog Q.

8 POWER ELBOW TELESCOPE

Gov't Cost $200.00
Our Price $17.50

Big. 2 in. diam- eter objective. All lenses Achromatic. Amici- prism erects the image. Four built-in filters—clear, amber, neutral and red. Slightly used condition but all guaranteed for perfect working order. Weight 5 lbs. Can be carried but a trifle bulky. Ex- cellent for finder on Astronomical Telescope.

Stock No. 943-Q ..... $17.50 Postpaid

20X PRISM SPOTTING SCOPE SET—Consists of all lenses and prisms (slightly chipped) you need to make a good, standard 20X Spot- ting Scope. Low reflection coated. 57mm dia. Achromatic objective. Some metal parts in- cluded. We furnish directions.

Stock No. 5145-Q ..... $22.00 Postpaid

LOW POWER RIFLESCOPES and ACHRO- MATIC LENSES to make your own higher power Riflescope (2½ to 7½ power or over). Write for Bulletin "Q".

TELESCOPE EYE-PIECE—Consists of 2 Ach- romatic lenses F.L. 28mm, in a metal mount.

Stock No. 5140-Q ..... $4.50 Postpaid

MAKE YOUR OWN ENLARGER

MOUNTED ANASTIGMAT LENSES

Use for Projectors, Enlargers, Copying Cameras. Complete with Shutter and Diaphragm. Value about $20. These were made for a specific camera but had longer or shorter focal length than could be used, and then the camera was discontinued. An excellent buy. WE WILL INCLUDE FREE ILLUS- TRATED BOOKLET on HOW TO MAKE YOUR OWN ENLARGER.

Stock No. 8004-Q Speed f/7.7, focal length approx. 127 mms. Suitable for pictures, negatives, positives up to 3½ x 4¼" ..... **$7.50 Postpaid**

Stock No. 8006-Q Speed of f/7.7, focal length approx. 100 mms. Suitable for pictures, etc. up to 2¼ x 3¼". **$8.50 Postpaid**

Stock #8007-Q—Speed of f/6.3, focal length approx. 100 mms. ... **$9.50 Postpaid**

CONDENSING LENSES—Seconds, but suitable for Enlargers and Spotlights.

Stock #1061-Q—6½" dia. 9" F.L. **$2.50 ea. Pstpd.**
Stock #1080-Q—5½" dia. 7" F.L. **$1.00 ea. Pstpd.**
Stock #1084-Q—2½" dia. 4"F.L. **$1.00 ea. Pstpd.**
Stock #1077-Q—2⅜"dia. 3"F.L. **$1.00 ea. Pstpd.**
Stock #1019-Q—6" dia. 16" F.L. **$2.00 ea. Pstpd.**
Stock #1062-Q—6"dia. 9"F.L. **$2.00 ea. Pstpd.**
Stock #1086-Q—1-11/16" dia. 3" F.L. **$ .25 ea. Pstpd.**
Stock #1103-Q—29/32" dia. ½" F.L. **$ .50 ea. Pstpd.**

NEW BULLETIN on our **BIG VARIETY OF PRISMS**—Over 50 different right angle Prisms, Rhomboidal, Binocular Porro, Leman, Porro- Abbe, Brashear-Hastings, Penta, Dove, Penta- gon, Ocular, and Amici Roof Prisms. Also Beam Splitters, Wedges and many others. Request Bulletin Q.

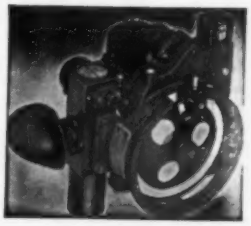
6 POWER PERISCOPE and **ADJUSTABLE TRI- POD.** 27" long. Focusing eye-piece. Adjustable cover for objective end. Govt. cost $150. Tripod and mount worth more than purchase price.

Stock No. 717-Q ..... $20.00 f.o.b. Audubon

NEW 50-PAGE IDEA BOOK "FUN WITH CHIPPED EDGE LENSES"

Contains wide variety of projects and fully covers the fascinating uses of all lenses in sets listed above . . . only **$1.00 Postpaid.**

UNUSUAL BARGAIN BUBBLE SEXTANTS



These Army Air Forces Bubble Sextants costs the Govt. about $125.00 each. A real bargain at our price at $12.50! Wooden carrying case in- cluded. Also auxiliary items. Wartime used. **BUT COM- PLETELY RE- PAIRED COL- LIMATED AND PUT IN GOOD WORK- ING ORDER.** If not satisfied that Sextant is exactly as represented, return within 10 days for refund. Full directions for use accompany each shipment.

Stock No. 924-Q ..... $12.50 Postpaid

Same Sextant as above, but **BRAND NEW** and with Automatic Electric Averaging Device and Illuminated Averaging Disc for nighttime use. Govt. cost $217. Though brand new we have rechecked Bubble and Collimation and GUARANTEE perfect working order.

Stock No. 933-Q ..... $22.50 Postpaid

BUBBLE SEXTANT—TYPE A-8A. Excellent condition but may be slightly used. Each has been carefully checked and collimated. Averaging device for nighttime use. Carry- ing Case and instruction booklet in- cluded. Gov't cost about $325.00.

Stock #946-Q ..... $32.50 Postpaid

SIMPLE LENS KIT

Some Govt. surplus, some commercial sur- plus, some chipped rejects, some perfect, few coated . . . in any event an excellent bargain. Containing Plano Convex, Dou- ble Convex, Concave, Meniscus Lenses. Dia. range 6mm to 40mm. Assorted focal lengths.

Stock No. 5-Q—45 lenses ..... $5.00 Postpaid
Stock No. 10-Q—80 lenses ..... $10.00 Postpaid

10 LENS KIT—THE LENS CRAFTERS DE- LIGHT! Kit includes plainly written, illus- trated booklet showing a specific project for every lens. Use these lenses in photog- raphy for copying. ULTRA CLOSE-UP SHOTS, Microphotography, for "Dummy Camera," Kodachrome Viewer, Detachable Reflex View Finder for 35mm cameras, Stereoscopic Viewer, ground glass and en- larging focusing aids. And for dozens of other uses in experimental optics, building TELESCOPES, low power Microscopes, etc.

Stock No. 2-Q ..... $1.00 Postpaid

LENS CLEANING TISSUE—Lens quality sheet size 11 x 7½ in. Made to Govt. speci- fications. High wet strength. Free of abra- sives.

Stock No. 721-Q—500 sheets ... $1.00 Postpaid

SLIDE PROJECTOR SETS—Consist of all unmounted lenses you need to make the following size projectors:

Stock No. 4038-Q—2¼x2¼ in., $3.35 Postpaid
Stock No. 4039-Q—2½x3½ in., $3.85 Postpaid
Stock No. 4029-Q—35mm ..... $2.85 Postpaid

MOUNTED PROJECTING LENS SYSTEM—F.L. 91.44 mm (just right for 35-mm Projectors). Speed of F 1.9. Outside dia. of mount at one end 60mm. Length of mount 64mm.

Stock No. 4033-Q, $3.00 Postpaid

THREADED OUTSIDE MOUNT FOR FOCUSING ABOVE SYSTEM (Not Illus.)—

Stock No. 715-Q ..... $1.00 Postpaid

HEAT ABSORBING PLATE GLASS

Stock No. 4009-Q-4" x 5" ..... 35c Pospaid
Stock No. 4010-Q-2" x 2" ..... 10c Pospaid

IF YOU'RE INTERESTED IN OPTICAL BARGAINS

Write for FREE CATALOG Q

We Have Literally Millions of War Surplus Lenses and Prisms for Sale at Bargain Prices. Numerous Types of Instruments Too!

ORDER BY SET OR STOCK NO.

EDMUND SALVAGE COMPANY · P.O. AUDUBON, NEW JERSEY

BOTANY-ANTHROPOLOGY

NATURE RAMBLINGS

by Frank Thone

Altar Flowers

➤ FLOWERS were carried into thousands of churches this week. They were arrayed upon the altars, banked against the pulpits, in preparation for the joyous feast of Easter, Christendom's bold assertion of the triumph of life over death. Flowers in the churches, along with the flower-tinted eggs of the home feast, are natural symbols of "resurrection, and life everlasting."

Like many symbols used by Christians, the resurrection-symbol of flowers was adopted and adapted out of a pre-Christian usage that was practically universal. Many of the old pagan religions symbolized the passing of winter and the re-blossoming of the seemingly dead earth in spring with flower-wreathed resurrection-myths of their own.

This was notably the case in ancient Asia Minor and Egypt. The Christian feast of Easter had its origin in the events of one Jewish Passover, as re-enacted in thousands of churches during Holy Week. But the Passover, in its turn, had a tie-in with an ancient Egyptian spring festival.

When Moses and Aaron approached Pharaoh with a request that their people be permitted to go into the wilderness for a three-day feast to Jehovah, that early totalitarian dictator probably dismissed the matter in his own mind with the notion that this outlandish sect was simply using some variant of the Osiris-feast as an excuse to dodge work in the brickyards. At any rate, he refused, and a train of events was started that developed into the present spring feasts of Passover and Easter—historically closely associated, even in their separation.

It was natural for early peoples, living in a pre-scientific age, to accept flowers as symbols of a resurrection of the dead. For so far as they could tell, the seeds and bulbs and other plant parts, buried in the cold earth like so many corpses, really were dead. For them, something supernatural occurred every time a seed germinated or a bulb threw up its sprout. Spring was a miracle.

For that matter, it still is!

Science News Letter, April 16, 1949

NEW

COMPACT

CONVENIENT

L&N Type E Galvanometer has these characteristics:

List No.	2430-a	2430-c	2430-d
Sensitivity per mm	0.5 microvolt	0.005 microampere	0.0005 microampere
Period seconds	3.0	2.5	3.0
External critical damping resistance	50 ohms	400 ohms	25000 ohms
System resistance	17 ohms	25 ohms	550 ohms

Write for further information.

LEEDS & NORTHRUP COMPANY 4901 STENTON AVE., PHILA. 44, PA.

LEEDS & NORTHRUP

Jrl. Ad ED22(4d)

MEDICINE

Hospital Costs To Rise

➤ HOSPITAL costs will continue to rise, even though there are "encouraging signs of price reductions" elsewhere, Dr. Richard D. Vanderwarker, director of Passavant Memorial Hospital, Chicago, predicted at a sectional meeting of the American College of Surgeons in Washington.

New developments in medicine, among them the use of radioactive substances now available from the atomic pile at Oak Ridge, are one factor that will increase hospital costs, Dr. Vanderwarker pointed out. Hospitals will need "expensively shielded areas" and other new equipment when the radioactive isotopes come into common use as they may very soon.

"Further discoveries in the field of 'wonder drugs' and the possible solution of the mystery of cancer will also influence costs," he stated.

Increased rates of pay to hospital personnel, extension "rightfully" of Social Security benefits to them and fluctuating occupancy rates in hospitals are the other factors on which Dr. Vanderwarker based his prediction of a rise in hospital costs.

Lowered prices may be a curse instead of a blessing to hospitals if they mean an economic depression because they will lower occupancy rates in hospitals. Lower occupancy increases the unit cost, that is, the cost per patient per day.

The "break-even" point of occupancy for hospitals probably requires that 80% of their beds be occupied. One possible way of maintaining this high occupancy rate would be for general hospitals to take psychiatric patients. This could be done, Dr. Vanderwarker said, with a minimum expense for alterations and there is a large demand for psychiatric beds.

The charges a 275-bed hospital makes for the use of its operating rooms may seem high to the patient and the surgeon. But the charges are only 50% of the total costs of maintenance of the operating rooms. Dr. Vanderwarker said this was discovered when his hospital installed a cost-accounting system.

Payroll is the largest item of hospital costs, accounting for 60% of total hospital costs. The way to attack this, Dr. Vanderwarker said, is not through salary reductions but through job analyses and better selection of personnel to make the personnel "maximally effective."

Most hospitals have an annual personnel turnover of 70%, compared to 15% often achieved in industry. He believes this could be reduced to 40% and said that, assuming each replacement costs the hospital $80, the saving in a year would amount to $9,600. He is "convinced that a program of scientific selection including pre-employment physical examination would save enough to pay the salary of a qualified personnel officer."

Labor-saving devices can also cut hospital costs. Investing $4,500 for uniform presses in the laundry, for example, will save at least $2,500 annually in payroll.

Science News Letter, April 16, 1949

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

WYOMING

Ride, fish, geologize or just relax. Now?

Paton Ranch will give you trout fishing in a mountain stream as it flows out of a canyon in the Big Horn Mountains, daily horseback rides along the picturesque trails and excellent food—most of which is grown on the ranch.

The region abounds in geological and historical interest—dinosaur bones, marine fossils and Indian implements are found nearby.

Write for folder—Paton Ranch, Shell, Wyoming.

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W. Washington 6, D. C. Ask for free publications direct from issuing organizations.

AIRCRAFT ELECTRICAL SYSTEMS, HYDRAULIC SYSTEMS, AND INSTRUMENTS—R. H. Drake—*Macmillan*, 393 p., illus., $5.60. This nontechnical book explains the fundamentals of three complex and closely related parts of modern aircraft.

BIOLOGY IN DAILY LIFE—Francis D. Curtis and John Urban—*Ginn*, 607 p., illus., $3.60. A text for high school students. Excellent drawings and illustrations.

BUILDING FOR MODERN MAN—Thomas H. Creighton, Ed.—*Princeton University Press*, 219 p., $3.50. Views of the experts in the field based on papers presented at the bicentennial conference at Princeton.

ESSENTIALS OF GYNECOLOGIC ENDOCRINOLOGY—Gardner M. Riley—*Caduceus*, 205 p., illus., $3.00. A handbook for medical students, internes, and medical specialists.

NATURAL PRODUCTS RELATED TO PHENANTHRENE—Louie F. Fieser and Mary Fieser—*Reinhold*, 3rd ed., 704 p., illus., $10.00. A detailed and critical survey which includes a number of new correlations and interpretations of data.

OCCUPATIONAL OUTLOOK HANDBOOK: Employment Information on Major Occupations for Use in Guidance—*Gov't Printing Office*, 453 p., illus., paper, $1.75 An extensive compilation by the Bureau of Labor Statistics in cooperation with the Veterans Administration. Forecasts your chances of finding a job in a wide variety of occupations.

OUR IMPERILED RESOURCES: Report of the 17th Annual New York Herald Tribune Forum—*New York Herald Tribune*, 247 p., illus., $2.25. Papers on a timely topic presented before the Herald Tribune Forum in October, 1948.

PHYSICS IN THE MODERN WORLD—Henry Semat—*Rinehart*, 434 p., illus., $5.00. A text for arts and social science students.

THE PRESCRIPTION STUDY OF THE PHARMACEUTICAL SURVEY—J. Solon Mordell—*American Council on Education*, 278 p., paper, $7.50. Report of an analysis of prescriptions to determine the knowledge required in compounding them.

PRINCIPLES OF ELECTRICITY AND ELECTROMAGNETISM—G. P. Harnwell—*McGraw-Hill*, 2d ed., 670 p., illus., $6.00. A thorough revision of a text for advanced students, which incorporates the many important developments in electricity made during the past decade.

REORGANIZATION OF FEDERAL BUSINESS ENTERPRISES: A Report to the Congress by the Commission on Organization of the Executive Branch of the Government, March, 1949.—*Gov't Printing Office*, 129 p., paper, 40 cents. This section of the Hoover report examines the entire vast field of federal business enterprises.

SCHOOL HEALTH EDUCATION—Delbert Oberteuffer—*Harper*, 405 p., $3.25. A college text for students preparing for teaching, nursing, or medicine.

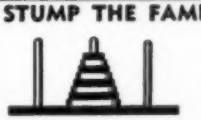
THE STORY OF SILK—William F. Leggett—*Lifetime Editions*, 361 p., $5.00. A descriptive narrated history of silk from its very beginning.

WINDBREAKS FOR ILLINOIS FARMSTEADS— J. E. Davis—*Illinois Natural History Survey*, Circular 38, 33 p., illus., paper, free upon request to publisher, Urbana, Ill. How to plant and care for windbreaks.

YEAR BOOK No. 47—*Carnegie Institution of Washington*, 235 p., illus., paper, $1.00. Reports of the year's researches and co-operative studies.

Science News Letter, April 16, 1949

STUMP THE FAMILY GENIUS



$1.00 *postpaid.*

With the *"Tower of Hanoi"*. One of the great puzzles of all time. Not a trick . . . but a *true* puzzle. Molded in bright blue and yellow plastic. *Great fun* for whole family, visitors and shut-ins too. Send for your "Tower" now. SATISFACTION GUARANTEED

THE THINKER PUZZLE CO.
P. O. BOX 82 GREENSBORO, N. C.

BIOCHEMISTRY

DDT Action May Depend On Solution in Skin Lipids

➤ DDT's ability to paralyze and kill insects appears to depend on its solubility in the lipids, or fat-like substances, of their cuticle or skin, it appears from experiments reported by Dr. H. Hurst of Cambridge University, England.

Dr. Hurst used the larvae or maggots of a blowfly species, which are highly resistant to DDT in powdered crystalline form. At a temperature of 67 degrees Fahrenheit they developed as if there were no DDT in the neighborhood. But when the temperature was raised to 97 degrees, then lowered again to 67 degrees, the larvae died. The most likely explanation is that at the higher temperature the skin lipids took in the DDT more readily and passed them on to the insects' sensitive nerves. Killing took place more readily at the lower temperature because that is apparently the level at which the insects' life processes function more efficiently.

Support for this theory was gained when Dr. Hurst dropped some of the larvae into kerosene in which DDT was dissolved. Kerosene alone is not fatal to the larvae, just as dry DDT is not; but it apparently served as a means for getting the DDT into the skin lipids, and thence again to the nerves.

These and other experiments are reported in outline in a letter to the editor of NATURE (Feb. 19). A more detailed publication of the results is promised in the near future.

Science News Letter, April 16, 1949

Words in Science— DISINFECTANT

➤ A DISINFECTANT—such as high heat, chlorine or tincture of iodine—kills disease germs or renders them harmless.

An antiseptic prevents the development and growth of disease germs. It is not a disinfectant unless it is capable of destroying germs as well as halting their growth. A familiar antiseptic is boric acid.

Formaldehyde (formalin) is both. It is an antiseptic in weak solution, but a disinfectant in strong solution.

Science News Letter, April 16, 1949

ATOMS PLANETS & STARS
Astronomical Wall Chart
(Not A Star Map)
2nd Edition Revised & Further Developed
(Size 4 Feet x 2 Feet)
Nothing Else Like It

ASTRONOMY VISUALIZED BY GRAPHIC ILLUSTRATIONS

Now in use in every State in the United States, and in 40 foreign countries, including hundreds of schools and colleges.

"I was extremely pleased to receive your beautiful drawing which gives a vivid representation of our solar system. I have hung it on the wall of my room to look often at it. Sincerely yours."—A. EINSTEIN

"The drawing is excellent and informative. You certainly have given an enormous amount of information in a limited space."—DR. FOREST RAY MOULTON

"I have never before seen the various features of the solar system and the earth shown so skillfully."—DR. M. M. LEIGHTON

"The Chart is to be highly recommended for the worthy purpose for which it is intended."—POPULAR ASTRONOMY

Note reduced sectional view through the earth, which is only one of many drawings included on this one chart.

Printed on 70-lb Sonata Vellum 25% pure rag Ledger paper.

Now $5.00 Each.

James Oliver Hogg, Jr.
1840 Burnham Bldg., Chicago 1, Illinois

• New Machines and Gadgets •

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 461. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

RUBBER-LIKE play pool for the back yard, of either 4.6-foot or 6-foot diameter, is made of vinylite plastic and resembles a set of three tire tubes, one attached above the other to form the sidewalls. These tubes are deflatable, and the larger of the pools holds 170 gallons of water.

Science News Letter, April 16, 1949

PHOTOGRAPHIC FLOODLIGHT, producing light from seven to 15 times the intensity of sunlight on a bright day, is particularly for use in taking motion pictures at speeds up to 8,000 individual frames a second for study in slow motion. Such photography is widely used in research.

Science News Letter, April 16, 1949

RADIO RECEIVER-TRANSMITTER, developed by the Army Signal Corps, is about the size of a king-sized cigarette package, weighs only 11 ounces with batteries included, and has a range of about 200 yards. The miniature transceiver has two tiny "B" batteries, one "A," and a two-foot collapsible antenna.

Science News Letter, April 16, 1949

FORESTER'S AXE is a five-in-one tool for use by cruisers estimating forest growth and marking trees for cutting. Its unique feature, shown on the back of the axe in the picture, is what is called an increment

borer, which when driven into the tree with a single blow brings out a wood core an inch or two long to show tree growth.

Science News Letter, April 16, 1949

SMOKE DETECTOR, for early warning of incipient fires in storerooms, is a single unit through which a continuous sample of air is drawn. After dust is filtered out, the air passes a beam of light focused on a photoelectric cell. Any smoke in the air cuts the amount of light hitting the cell, causing an alarm.

Science News Letter, April 16, 1949

BLOTTER-LIKE strips filled with tiny dry crystals of three powerful insecticides, are designed to use on house floors where insects crawl, or in pantries, clothes closets and under mattresses. Crawling vermin, from cockroaches to fleas, are killed by them.

Science News Letter, April 16, 1949

MICROGRAPHIC camera offers a positive means of identifying and recording diamonds and some other transparent gemstones. This improved instrument for making photomicrographs records not only the characteristic so-called inclusions in the stone, which are as distinctive as fingerprints, but the stone's complete description.

Science News Letter, April 16, 1949

COLLAR HOLDERS, to prevent collar points from curling up during the day, are tiny triangular pieces of fabric with an adhesive on both sides. After the necktie is in place, one piece, moistened with the tongue, is stuck to the underside of each collar point and to the shirt.

Science News Letter, April 16, 1949

Do You Know?

Flat-bottomed tubs are recommended for bathrooms as protection against slipping.

High-grade *molasses* can be made from the orange wastes from juice factories.

Chickenpox is one of the mildest of the diseases of children but it is very "catching."

About 60% of the *graphite* consumed in the United States is used by makers of electric dry batteries.

In the United States over 5,000,000 acres of arid and semi-arid lands have been made productive by *irrigation water*.

Beautiful *"pearl" necklaces* worn by many women are often glass or plastic beads coated with pearl paste obtained from the scales of young herring.

Old type of *kerosene* is no longer to be used in military jet aircraft; a gasoline-type fuel with an octane rating between 50 and 65 will be used instead.

It's not too late . . .

Start your spring planting indoors with a

SOILLESS GARDENING KIT

Think of it! . . . a complete, easy-to-use kit can start you off with a miniature garden in your house or apartment . . . little space needed, no dirt . . . plants ready for transplanting outside in two weeks.

Created and produced by SCIENCE SERVICE, Soilless Gardening Kits come complete with full instructions, pots, seeds, chemicals, vermiculite, hormodin, and seedless fruit hormone.

ORDER NOW $4.95 each, postpaid

Please mail to my address as printed at the right_____Soilless Gardening Kits at $4.95 each.

I enclose $_____ ( ) Bill me.

O.K. by initials_____

SCIENCE SERVICE
1719 N Street N. W. • Washington 6, D. C.

SNL PRIORITY ORDER

Clip and enclose this address imprint whenever you write us to renew your SCIENCE NEWS LETTER subscription, change address, order other materials, etc. It identifies you as one of the SNL family. Lower line date is expiration. Allow three weeks for address change.

ELECTRO-IT PUB. INFO. DEPT.
TECHNOLOGY DEPT.
99 PUTNAM AVE.
DETROIT 2, MICH.